CLAIMS

What is claimed is:

1. A method comprising:

determining an initial number of bits associated with an initial common scale factor;

computing an initial increment using the initial number of bits and a target number of bits;

incrementing the initial common scale factor by the initial increment;

adjusting the incremented common scale factor based on the target number of bits;

computing a plurality of individual scale factors based on the adjusted common scale factor and allowed distortion; and

if a current number of bits associated with the plurality of individual scale factors exceeds the target number of bits, modifying the adjusted common scale factor until a resulting number of bits no longer exceeds the target number of bits.

2. The method of claim 1 further comprising:

determining the initial common scale factor.

3. The method of claim 2 wherein determining the initial common scale factor comprises:

selecting a spectral coefficient of a maximum value within a frame;

if the maximum spectral coefficient is equal to zero, setting the initial common scale factor to 30; and

if the maximum spectral coefficient is not equal to zero, setting the initial common scale factor to a prior common scale factor.

4. The method of claim 3 wherein the prior common scale factor is any one of a common scale factor in a previous frame and a common scale factor in another channel.

5. The method of claim 1 wherein the initial increment is computed using an expression

*initial_increment = 10 * (initial_bits – target_bits) / target_bits,*

wherein *initial_increment* is the initial increment, *initial_bits* is the initial number of bits, and *target_bits* is the target number of bits.

6. The method of claim 1 wherein adjusting the incremented common scale factor comprises:

quantizing spectral data within a frame using the incremented common scale factor;

determining that quantized spectral data is valid;

determining a current number of bits associated with the incremented common scale factor;

if the current number of bits exceeds the target number of bits, varying the incremented common scale factor in a decrease bit order; and

if the current number of bits does not exceed the target number of bits, varying the incremented common scale factor in an increase bit order.

7. The method of claim 6 wherein the incremented common scale factor is varied until a current increment is equal to zero.

8. The method of claim 1 wherein computing a plurality of individual scale factors comprises:

iteratively adjusting each of the plurality of individual scale factors until an energy error associated with the adjusted each of the plurality of individual scale factors is below the allowed distortion.

9. The method of claim 8 wherein adjusting each of the plurality of individual scale factors comprises:

incrementing each of the plurality of individual scale factors by a current increment;

calculating an energy error associated with the incremented individual scale factor;

determining a type of the calculated energy error;

setting the current increment to a first constant if the calculated energy error is of a first type;

setting the current increment to a second constant if the calculated energy error is of a second type; and

determining whether the calculated energy error is below the allowed distortion.

10. The method of claim 9 wherein determining a type of the calculated energy error comprises:

determining that the calculated energy error is of the first type if *error_energy(sb)* > *K* * *allowed_distortion*; and

determining that the calculated energy error is of the second type if *error_energy(sb)* =< *K* * *allowed_distortion*,

wherein *error_energy(sb)* is the calculated energy error associated with the incremented individual scale factor, *K* is a third constant, and *allowed_distortion* is the allowed distortion.

11. The method of claim 10 wherein values of the first constant, second constant and third constant are determined experimentally.

12. The method of claim 1 wherein modifying the adjusted common scale factor comprises:

determining that the current number of bits associated with the plurality of individual scale factors exceeds the target number of bits;

adding an offset value to the adjusted common scale factor to compute a modified common scale factor; and

calculating the resulting number of bits associated with the plurality of individual scale factors and the modified common scale factor.

13. The method of claim 12 further comprising:

refraining from recomputing the plurality of individual scale factors when the adjusted common scale factor is modified.

14. A computer readable medium that provides instructions, which when executed on a processor cause the processor to perform a method comprising:

determining an initial number of bits associated with an initial common scale factor;

computing an initial increment using the initial number of bits and a target number of bits;

incrementing the initial common scale factor by the initial increment;

adjusting the incremented common scale factor based on the target number of bits;

computing a plurality of individual scale factors based on the adjusted common scale factor and allowed distortion; and

if a current number of bits associated with the plurality of individual scale factors exceeds the target number of bits, modifying the adjusted common scale factor until a resulting number of bits no longer exceeds the target number of bits.

15. The computer readable medium of claim 14 wherein the method further comprises:

determining the initial common scale factor.

16. The computer readable medium of claim 15 wherein determining the initial common scale factor comprises:

selecting a spectral coefficient of a maximum value within a frame;

if the maximum spectral coefficient is equal to zero, setting the initial common scale factor to 30; and

if the maximum spectral coefficient is not equal to zero, setting the initial common scale factor to a prior common scale factor.

17. The computer readable medium of claim 16 wherein the prior common scale factor is any one of a common scale factor in a previous frame and a common scale factor in another channel.

18. A computerized system comprising:

a memory; and

at least one processor coupled to the memory, the at least one processor executing a set of instructions which cause the at least one processor to

determine an initial number of bits associated with an initial common scale factor,

compute an initial increment using the initial number of bits and a target number of bits,

increment the initial common scale factor by the initial increment,

adjust the incremented common scale factor based on the target number of bits,

compute a plurality of individual scale factors based on the adjusted common scale factor and allowed distortion, and

if a current number of bits associated with the plurality of individual scale factors exceeds the target number of bits, modify the adjusted common scale factor until a resulting number of bits no longer exceeds the target number of bits.

19. The system of claim 18 wherein the at least one processor executes a set of instructions which cause the at least one processor to further determine the initial common scale factor.

20. The system of claim 19 wherein the at least one processor is to determine the initial common scale factor comprises by

selecting a spectral coefficient of a maximum value within a frame,

if the maximum spectral coefficient is equal to zero, setting the initial common scale factor to 30, and

if the maximum spectral coefficient is not equal to zero, setting the initial common scale factor to a prior common scale factor.

21. The system of claim 20 wherein the prior common scale factor is any one of a common scale factor in a previous frame and a common scale factor in another channel.

22. An encoding apparatus comprising:

a Huffman encoding module to determine an initial number of bits associated with an initial common scale factor; and

a quantization module to compute an initial increment using the initial number of bits and a target number of bits, to increment the initial common scale factor by the initial increment, to adjust the incremented common scale factor

based on the target number of bits, to compute a plurality of individual scale factors based on the adjusted common scale factor and allowed distortion, and if a current number of bits associated with the plurality of individual scale factors exceeds the target number of bits, to modify the adjusted common scale factor until a resulting number of bits no longer exceeds the target number of bits.

23. The apparatus of claim 22 wherein the quantization module is further to determine the initial common scale factor.

24. The apparatus of claim 23 wherein the quantization module is to determine the initial common scale factor by

selecting a spectral coefficient of a maximum value within a frame,

if the maximum spectral coefficient is equal to zero, setting the initial common scale factor to 30, and

if the maximum spectral coefficient is not equal to zero, setting the initial common scale factor to a prior common scale factor.

25. An apparatus comprising:

means for determining an initial number of bits associated with an initial common scale factor;

means for computing an initial increment using the initial number of bits and a target number of bits;

means for incrementing the initial common scale factor by the initial increment;

means for adjusting the incremented common scale factor based on the target number of bits;

means for computing a plurality of individual scale factors based on the adjusted common scale factor and allowed distortion; and means for modifying the adjusted common scale factor, if a current number of bits associated with the plurality of individual scale factors exceeds the target number of bits, until a resulting number of bits no longer exceeds the target number of bits.